

REMARKS

Applicant thanks the Examiner for the indication that claim 19 recites allowable subject matter. Claims 14-26, 40, and 41 are pending and claims 1-13, 27-39, and 42 have been withdrawn.

The Examiner states that claims 14 and 40 are generic to Species 1, but not Species 2. For clarity, applicant respectfully submits that claims 14 and 40 are generic to Species 2, which the Examiner listed as claims 14-26 in the Action dated December 2, 2002. Additionally, applicant submits that claim 40 is generic to both Species 1 and 2. In particular, claim 40 broadly recites that the silver-based composition is placed between the first ceramic component and the second ceramic component. Such a configuration would cover applying the silver-based composition to the surface of the first ceramic component, as recited in claim 14 (species 2) and to the surfaces of both the first and the second ceramic components, as recited in claim 1 (species 1).

The Examiner has objected to the drawings because the reference character "175" is used to designate both "the inner surface" and "a ground lead disconnecter." Applicant has amended the specification to remove a reference character for "the inner surface." By this amendment, the objection to the drawings is obviated. Accordingly, applicant respectfully requests withdrawal of this objection.

In accordance with the Examiner's suggestion, applicant has amended the title as follows:
METHOD OF JOINING COMPONENTS USING A SILVER-BASED COMPOSITION.

Claim 14 relates to a method of joining a surface of a first ceramic component to a surface of a second ceramic component using a silver-based composition. The method includes applying the silver-based composition to the surface of the first ceramic component, contacting the silver-based composition applied to the first ceramic component to the surface of the second ceramic component, heating the surfaces of the first and second ceramic components to melt the applied silver-based composition, and cooling the surfaces of the first and second ceramic components to form a bond between the first and second ceramic components. The silver-based

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composition is a mixture of silver metal and a metal oxide, and the metal in the metal oxide is a metal other than silver.

Claim 40 relates to a method of joining a first ceramic component to a second ceramic component using a silver-based composition. The method includes placing the silver-based composition between the first ceramic component and the second ceramic component, joining the first ceramic component to the second ceramic component, heating the first and second ceramic components to melt the silver-based composition, and cooling the first and second ceramic components to form a bond between the first and second ceramic components. The silver-based composition is a mixture of silver metal and a metal oxide, and the metal in the metal oxide is a metal other than silver.

Claims 14-18, 20, 21, 24, 26, 40, and 41 have been rejected as being anticipated by U.S. Patent No. 5,720,859 (Czubarow). Applicant requests withdrawal of this rejection because Czubarow fails to describe or suggest a silver-based composition that is a mixture of silver metal and a metal oxide made from a metal other than silver, as recited in claims 14 and 40.

Czubarow relates to a combination 2 coated onto a surface of a substrate 1 and including a metal source and a source of reducing carbon. See Czubarow at col. 2, lines 27-30. After the combination 2 is applied to the surface of the substrate 1, the substrate 1 and the combination 2 are heated. See Czubarow at col. 2, lines 37-40. Heating of the combination 2 causes a carbothermic reduction of the combination 2, "in which the metal source is reduced to metal by carbon ... with the carbon being converted to CO or CO₂" to form a metallic electrode 3. See Czubarow at col. 2, lines 40-45.

Contrary to the rejection, Czubarow's combination 2 is not a mixture of silver metal and a metal oxide, in which the metal in the metal oxide is a metal other than silver. Prior to the carbothermic reduction, Czubarow's combination 2 is simply a combination of a metal oxide and carbon. See Czubarow at col. 2, lines 52-60. Thus, prior to the reduction, there is no silver metal in Czubarow's combination. After the Czubarow's carbothermic reduction, the combination 2 is converted to metal and carbon dioxide. See Czubarow at col. 2, lines 52-60.

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Thus, following the reduction, there is no metal oxide in the metallic electrode 3. For these reasons, claims 14 and 40 are allowable over Czubarow.

Claims 14-18, 20, 21, 24, 26, and 41 depend from claim 14 and are allowable for at least the reasons that claim 14 is allowable.

Claims 22, 23, and 25 have been rejected as being obvious over Czubarow in view of U.S. Patent No. 4,369,063 (McGowan). Claims 22, 23, and 25 depend from claim 14, which was rejected as being anticipated by Czubarow. As discussed above, Czubarow fails to describe or suggest a silver-based composition that is a mixture of silver metal and a metal oxide made from a metal other than silver. Furthermore, one of ordinary skill in the art would have had no motivation to modify Czubarow using the conductive coating of McGowan. Czubarow and McGowan do not provide any such motivation.

Moreover, any such modification of Czubarow would change the principle of operation of Czubarow's method. If Czubarow's combination were to be modified with the conductive coating of McGowan, the resulting combination could not be used to bond the components of Czubarow. Rather, as McGowan explains, the conductive coating is merely used to conduct current in, for example, electrical components on printed circuit boards and heating elements. See McGowan at co. 3, line 61 to col. 4, line 5. Furthermore, if Czubarow's combination were to be modified with the conductive coating of McGowan, Czubarow would not be able to use the carbothermic reduction in forming a disk stack. Accordingly, claim 14 is allowable over Czubarow in view of McGowan.

Claims 22, 23, and 25 are allowable for at least the reasons that claim 14 is allowable and for containing allowable subject matter in their own right.

For example, claim 22 recites that the silver-based composition is a mixture of silver metal and vanadium oxide. As the Examiner agrees, Czubarow fails to describe or suggest any such silver-based composition. Furthermore, as discussed above, one of ordinary skill in the art would have had no motivation to modify Czubarow using McGowan's conductive coating. The Examiner simply does not provide any motivation relating to claim 22. The Examiner merely states in reference to claim 23 "[i]t would have been obvious to one having ordinary skill in the

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Applicant : Alan M. Meier et al.
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Filed : January 23, 2002
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art at the time the invention was made to modify Czubarow et al's silver-based composition comprising approximately between 0.1 to 10 % vanadium oxide by weight as taught by McGowan for increasing bonding strength." However, as discussed above, though McGowan's composition bonds to the substrate, McGowan never suggests that the composition can be used to form a bond between ceramic components. Indeed, McGowan's only use for the composition appears to be to provide electrical conduction. Moreover, any such modification of Czubarow's combination would change the principle of operation of Czubarow's method, which requires a carbothermic reduction of the combination.

For the reasons noted above, applicant submits that all claims are in condition for allowance.

Enclosed is a \$110 check for the Petition for Extension of Time fee. Please apply any other charges or credits to deposit account 06-1050.

Respectfully submitted,

Date: August 8, 2003

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